

Anatomy & Physiology



This test will begin at 6:00pm. The first slide will ask you for your school, team and team members. 1 person should submit answers for the team. Once the section gets to 0:00, the test moves on but DOES record the answers you have clicked.

Open Ended Question

Please list your School Name, Team (V, JV1, JV2, JV3), and team member FIRST names.
Don't forget to hit submit to record your answers before the timer gets to 0:00.

Quiz

Section 1

You are currently competing for the regional competition in the state of North Carolina.

☒ True

☐ False

Which body system is NOT being tested on this year?

- ☐ Skeletal
- ☐ Muscular
- ☐ **Lymphatic**
- ☐ Integumentary

An injury that penetrates the dermis will result in bleeding.

- ☒ True
- ☐ False

Which epidermal cell type contributes to the immune response?

- ☐ Keratinocyte
- ☐ Merkel cell
- ☐ Melanocyte
- ☐ Langerhans cell

Which epidermal cell type contributes to skin pigmentation?

- ☐ Keratinocyte
- ☐ Merkel cell
- ☒ Melanocyte
- ☐ Langerhans cell

Which epidermal cell type plays a sensory role?

- ☐ Keratinocyte
- ☒ **Merkel cell**
- ☐ Melanocyte
- ☐ Langerhans cell

Quiz

Section 2

What are sweat glands referred to as?

- ☐ Sebaceous glands
- ☐ Ceruminous glands
- ☐ **Sudoriferous glands**
- ☐ Mammary glands

Lamellated corpuscles are responsible for detection of what?

- ☒ **Pressure**
- ☐ Light touch
- ☐ Stretch
- ☐ None of the above

What is the classification of the patella?

- ☐ Long bone
- ☐ Flat bone
- ☒ Sesamoid bone
- ☐ Irregular bone

What is the classification of the scapula?

- ☐ Long bone
- ☒ Flat bone
- ☐ Sesamoid bone
- ☐ Irregular bone

List the types of vertebrae in order from least number to greatest number.

- ☐ Cervical, thoracic, lumbar
- ☒ Lumbar, cervical, thoracic
- ☐ Thoracic, cervical lumbar
- ☐ Lumbar, thoracic, cervical

Which vertebrae consist of transverse foramina?

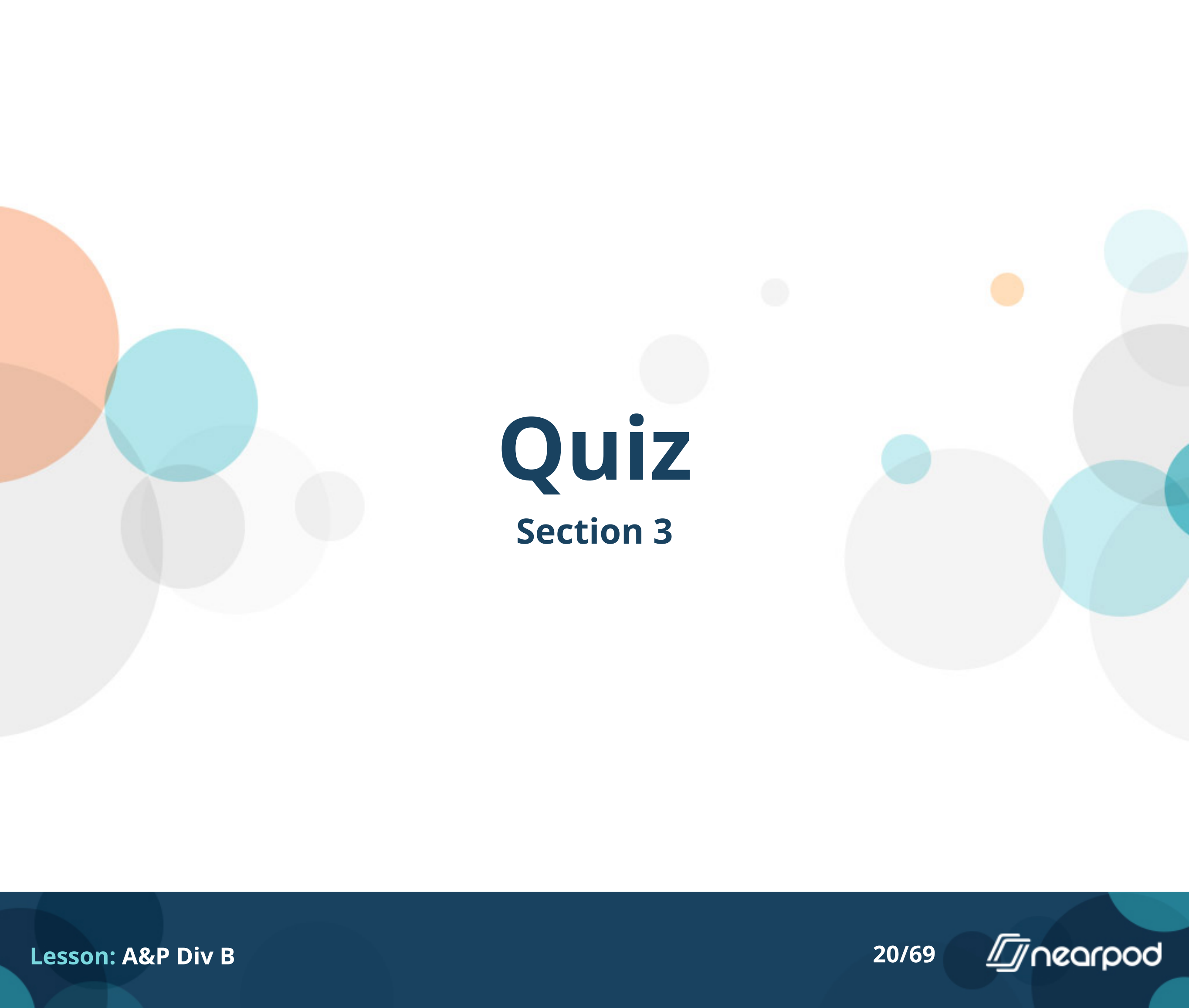
- ☒ **Cervical**
- ☐ Thoracic
- ☐ Lumbar
- ☐ Cervical & Thoracic

Open Ended Question



(3 pts) John is an avid runner. Lately, he's been feeling intense pain, especially during runs, in his tibias. He goes to the radiologist, who conducts an X-ray. There were no obvious fractures found. The radiologist then orders a bone scan. What does she suspect is wrong with John's tibias? Be sure to hit Submit before the timer gets to 0:00 to record your answer!

Stress/Hairline Fractures



Quiz

Section 3

What best describes hair?

- ☐ Keratinized, living cells
- ☒ Keratinized, dead cells
- ☐ Non-keratinized, living cells
- ☐ Non-keratinized, dead cells

Which of the following is not a valid function of sebum on human skin?

- ☐ Lubricating the skin
- ☐ Preventing bacterial growth
- ☐ **Pigmentation of the skin**
- ☐ These are all valid functions of sebum

What is the most common type of skin cancer?

- ☐ Melanoma
- ☒ Basal cell carcinoma
- ☐ Squamous cell carcinoma
- ☐ Lipoma

Squamous cell carcinoma affects cells in which layer of the epidermis?

- ☐ Stratum basale
- ☒ **Stratum spinosum**
- ☐ Stratum lucidum
- ☐ Stratum granulosum

What does the B stand for in the ABCDE rule of melanoma self-diagnosis of skin markings?

- **Border irregularity. Ragged, notched, or blurred edges are more indicative of melanoma.**
- Border regularity. Smooth, defined edges are more indicative of melanoma.
- Blood. Bleeding in and around the marking is more indicative of melanoma.
- Black. A darker, black spot is more indicative of melanoma.

Why are darker-skinned people less likely to get melanoma in their lifetimes?

- ☐ They have more keratinocytes than fair-skinned people.
- ☐ They have more keratin than fair-skinned people.
- ☐ They have more melanocytes than fair-skinned people.
- ☐ They have more melanin than fair-skinned people.

Quiz

Section 4

A first-degree burn affects which layers of the skin?

- ☒ Epidermis only
- ☐ Epidermis and dermis only
- ☐ Epidermis, dermis, and subcutaneous layer
- ☐ None of the above

Which of the following occurs as a result of a third-degree burn?

- ☐ Dehydration
- ☐ Loss of sensation in the burned area
- ☐ Increased likelihood of infection
- ☒ All of the above

Which of the following cell types breaks down bone matrix?

- ☐ Osteoprogenitor cell
- ☐ Osteoblast
- ☐ Osteocyte
- ☐ **Osteoclast**

Which of the following cell types is contained in a lacuna?

- ☐ Osteoprogenitor cell
- ☐ Osteoblast
- ☒ Osteocyte
- ☐ Osteoclast


Which of the following cell types can develop into a chondrocyte?

- ☒ Osteoprogenitor cell
- ☐ Osteoblast
- ☐ Osteoclast
- ☐ None of the above

Open Ended Question



(4pts) Organophosphate pesticides have the ability to inhibit the action of acetylcholinesterase at the neuromuscular junction. What effect would you observe in someone with organophosphate poisoning? Why?



Quiz

Section 5

Which vertebrae consist of the smallest vertebral foramina?

- ☒ **Cervical**
- ☐ Thoracic
- ☐ Lumbar
- ☐ Thoracic & Lumbar are equally small

Which vertebrae consist of triangular vertebral foramina?

- ☒ **Cervical**
- ☐ Thoracic
- ☐ Lumbar
- ☐ None of the above

What kind of fracture involves bone protruding through the skin?


- ☐ Greenstick fracture
- ☐ Open fracture
- ☐ Compound fracture
- ☐ **Open & Compound fracture**

What is the cause of osteoarthritis?

- ☐ Autoimmunity
- ☐ Bacterial infection
- ☐ Viral infection
- ☐ Aging

If the knee is hyperextended, tearing of which ligament can occur?

- ☒ ACL
- ☐ BCL
- ☐ MCL
- ☐ LCL



Quiz

Section 6

Which of the following is not a type of bone fracture?

- ☐ Stable
- ☒ Sliding
- ☐ Transverse
- ☐ Oblique

Scoliosis is characterized by curvature of the spine abnormally in the ____ direction.

- ☐ Posterior
- ☐ Anterior
- ☒ Lateral
- ☐ Transverse

Which of the following is not a risk factor for the development of osteoporosis?

- ☐ Gender
- ☐ Age
- ☐ Smoking
- ☐ Age & Smoking
- ☐ These are all risk factors

Which type of muscle involves voluntary contraction?

- ☒ **Skeletal**
- ☐ Cardiac
- ☐ Smooth
- ☐ Both Cardiac & Smooth

Which type of muscle contains intercalated discs?

- ☐ Skeletal
- ☒ Cardiac
- ☐ Smooth
- ☐ Cardiac & Smooth

Which muscle type can be multinucleated?

- ☐ Skeletal
- ☐ Cardiac
- ☐ Smooth
- ☐ **Cardiac & Skeletal**

Which type of muscle requires Ca^{2+} to contract?

- ☐ Skeletal
- ☐ Cardiac
- ☐ Smooth
- ☒ All of the Above

Open Ended Question



(3pts) Sam broke her arm as a child. As an adult, she once held up her two arms to one another and noticed that one arm was shorter than the other! Which arm was shorter, the broken or unbroken one? Why? Be sure to hit Submit before the timer gets to 0:00 to record your answer!

Quiz

Section 7

Ca²⁺ ions bind to which protein prior to the power stroke?

- ☐ Myosin
- ☒ Troponin
- ☐ Tropomyosin
- ☐ Actin

Tetanus affects cardiac muscle more severely than smooth or skeletal muscle.

☐ True

☒ False

A sarcomere's I band contains only thick filaments.

- ☐ True
- ☒ False

Which bone does the deltoid insert into?

- ☐ Clavicle
- ☒ Humerus
- ☐ Scapula
- ☐ Ulna

What is the antagonist to the biceps brachii muscle?

- ☐ Brachialis
- ☐ Brachioradialis
- ☒ **Triceps brachii**
- ☐ None of the above

Quiz

Section 8

What is the action of the masseter?

- ☒ Elevation of the jaw
- ☐ Depression of the jaw
- ☐ Rotation of the neck
- ☐ None of the above

Poliomyelitis is caused by what type of pathogen?

- ☒ **Virus**
- ☐ Bacterium
- ☐ Fungus
- ☐ Protist

Which of the following statements about Duchenne muscular dystrophy is false?


- ☐ It is a genetically inherited disorder.
- ☐ The average life expectancy is in the mid-20s.
- ☐ The disease can be detected with high accuracy before birth.
- ☐ It primarily affects females.

What is the cause of myasthenia gravis (MG)?

- Bacteria bind to acetylcholine receptors at neuromuscular junctions, leading to spastic paralysis.
- A virus targets presynaptic neurons at neuromuscular junctions, leading to flaccid paralysis.
- The body's own immune cells bind to acetylcholine receptors at neuromuscular junctions, leading to flaccid paralysis.
- A parasite binds to voltage-gated Ca^{2+} ion channels at the neuromuscular junctions, leading to spastic paralysis.

How can someone prevent exercise-induced sprains and strains?

- ☐ Warming up and then stretching before beginning exercise.
- ☐ Halting physical activity when beginning to feel pain.
- ☐ Easing into exercise regimes, especially when muscles haven't been exercised in a long time.
- ☐ **All of the above**



Quiz

Section 9

Tetanus is caused by what type of pathogen?

- ☐ Virus
- ☒ **Bacterium**
- ☐ Fungus
- ☐ Protist

Which of the following is NOT a symptom of tetanus?

- ☐ Muscle spasms
- ☐ Elevated heart rate
- ☐ Low blood pressure
- ☐ Sweating

Which muscle type is tetanus generally most likely to occur in?

- ☒ **Skeletal**
- ☐ Smooth
- ☐ Cardiac
- ☐ Both Skeletal & Cardiac

Where is the pathogen that causes tetanus most commonly found?

- ☒ **In soil, manure, and saliva**
- ☐ On contaminated surfaces
- ☐ In contaminated water
- ☐ In contaminated food

Which of these conditions is characterized by inflammation of skeletal muscles throughout the body?

- ☐ Myositis ossificans
- ☐ Juvenile myositis
- ☐ Dermatomyositis
- ☐ **Polymyositis**

You are Done!

